

LINDA LINGLE
GOVERNOR



CARLITO P. CALIBOSO
CHAIRMAN

JOHN E. COLE
COMMISSIONER

LESLIE H. KONDO
COMMISSIONER

STATE OF HAWAII
PUBLIC UTILITIES COMMISSION
DEPARTMENT OF BUDGET AND FINANCE
465 S. KING STREET, #103
HONOLULU, HAWAII 96813

Telephone: (808) 586-2020
Facsimile: (808) 588-2088

e-mail: Hawaii.PUC@hawaii.gov

March 2, 2009

To: Service List

Re: Docket No. 2008-0273; In the Matter of Public Utilities Commission Instituting a Proceeding to Investigate the Implementation of Feed-in Tariffs

Enclosed please find information requests ("IRs") prepared by the Commission's consultant, the National Regulatory Research Institute, for the above-referenced docket. In preparation for the upcoming panel hearings scheduled for April 13, 2009, the applicable parties are directed to respond to the IRs within fourteen days of the date of this letter.

Please contact the undersigned if you have any questions.

Sincerely,

for 

Stacey Kawasaki Djou
Commission Counsel

SKD:ps

Information Requests

These information requests elicit information to inform NRRI's FiT recommendations. Responses to these questions will also help NRRI focus the FiT hearing and ensure that questions to parties are on point and that parties are prepared to provide substantive responses. Responses will inform NRRI's analysis of (1) the appropriate scope of the FiT in terms of eligible technologies and project sizes, (2) optimal initial prices, (3) treatment of technologies that do and do not provide system reliability benefits, and (4) the interaction between the FiT and other methods to incorporate renewable energy projects.

These information requests pertain to the following specific issues:

1. The nature of current reliability constraints on Hawaii's electric grid, including the current maximum reliable penetration of intermittent resources on each island, and the effects of the undersea transmission system, other system upgrades, and additional dispatchable resources to facilitate additional renewable resources.
2. Hawaii's available biomass and geothermal, and small wind resources, experience with these technologies, and the appropriateness of including them in an FiT.
3. The potential for additional large and small renewable energy projects on Oahu.
4. Interconnection costs for various renewable energy technologies and price differentials for components and development costs for wind and solar projects between Hawaii and the mainland U.S.
5. Any regulatory or zoning impediments to the deployment of renewable energy on Oahu.
6. The ability of different technologies to provide system benefits and the mechanisms for promoting development of such systems.
7. Mechanisms to protect HECO's financial integrity.

I. Questions for HECO¹

A. Reliability considerations and intermittent resource penetration

1. For each island, with the current levels of demand, transmission, and supply resources, what is the maximum amount of total and additional intermittent resources that can be accommodated without compromising reliability?
2. List and describe all major transmission and distribution system upgrades as well as new dispatchable generation and storage resources that are under construction or planned and what year they are expected to commence operation. Some of these may have been included in HECO and the Consumer Advocate's response to HDA/HECO-IR-5, although this question seeks the specific project characteristics and their in-service dates.
3. What would the answer to Question 1 above be if the upgrades in Question 2 were completed, absent changes in energy demand or other factors? Provide the answer for each year in which the upgrades enter service.
4. Based on HECO's interconnection studies and system planning, please list the size, technology, location, and expected completion date of all 1 MW or larger renewable energy projects in advanced development or under construction in Hawaii.
5. For each island, please describe to what extent any current or likely potential reliability constraints on the integration of intermittent renewable energy resources are driven by the amount of available intra-island transmission capacity or by the amount of dispatchable resources and ancillary services.
6. On islands, such as the Big Island, that feature a high penetration of intermittent resources, to what extent would the availability of additional dispatchable and curtailable resources improve reliability and/or facilitate the incorporation of additional intermittent resources?
7. What is the anticipated completion date of each section of undersea cable system between islands described in the HCEI Agreement?
8. How would the proposed undersea cable systems facilitate additional renewable energy integration in each island?

¹ The references to "HECO" include Hawaiian Electric Company, Inc., Hawaii Electric Light Company Inc., and Maui Electric Company, Limited.

9. How many additional MWs of intermittent resources could likely be integrated into each island with the undersea cable system completed?
10. Would the undersea cable system enable the FiT to include larger systems than those proposed by HECO and the Consumer Advocate? Please explain why or why not.
11. Please describe the anticipated effects of time-of-use (TOU) rates, robust demand response programs, and other initiatives facilitated by advanced metering infrastructure (AMI) on system reliability.
12. How would the TOU rates and more robust demand response programs enabled by AMI facilitate additional renewable energy integration on each island?
13. Would the TOU rates and more robust demand response programs enabled by AMI enable the FiT to allow sales by larger systems than those proposed by HECO and the Consumer Advocate? Please explain why or why not.

B. Technology and FiT eligibility and potential application

14. Please describe all ways in which small-scale, biomass generators, including anaerobic digestion systems, do not meet the criteria listed on page 5 of the HECO and the Consumer Advocate's FiT proposal.
15. According to HECO and the Consumer Advocate's response to HC&S-IR-1, "Biomass was not included in the initial list of FIT-eligible technologies since insufficient information was available on small scale biomass technology." Taking into consideration case studies and analysis provided by the Cornell University Manure Management Program (<http://www.manuremanagement.cornell.edu/>) and reports conducted by or for the California Department of Energy (<http://www.energy.ca.gov/publications/searchReports.php?keyword=Biomass>), including the 2008 report, Cost of Electricity and Pipeline-Quality Natural Gas from Biogas (<http://www.energy.ca.gov/2008publications/CEC-999-2008-010/CEC-999-2008-010.PDF>), what additional cost and performance information are necessary to include biomass resources in the FiT?
16. Please list and describe all grid-connected, biomass generators in Hawaii. For each, provide the capacity, feedstock, and location.
17. Do biomass generators currently operating in Hawaii provide system reliability benefits, such as being utility dispatchable or curtailable, or having low-voltage/low-frequency ride-through capabilities? Do sub-1 MW biomass generators share these traits?
18. Please provide their locations, in-service dates, and size in kW of all geothermal generators operating in Hawaii.
19. Please describe all ways in which geothermal generators do not meet the criteria listed on page 5 of the HECO and the Consumer Advocate's FiT proposal.

20. Do geothermal generators currently operating in Hawaii provide system reliability benefits, such as being utility dispatchable and curtailable or having low-voltage/low-frequency ride-through capabilities?
21. Are there any installed wind turbines in Hawaii with less than 150 kW of capacity? If so, please describe their sizes in kW, locations, total number, aggregate capacity, and installation years.
22. Do wind turbines currently operating in Hawaii provide system reliability benefits, such as being utility dispatchable or curtailable, or having low-voltage/low-frequency ride-through capabilities? Do small wind turbines share these traits?
23. Please provide the capacity, location, and installation years of all in-line hydropower systems operating in Hawaii.
24. Do in-line hydropower systems operating in Hawaii provide system reliability benefits, such as being utility curtailable or having low-voltage/low-frequency ride-through capabilities? How do these traits vary by system size?

C. Mechanisms to protect financial integrity

25. In HECO and the Consumer Advocate's FiT proposal, HECO requested that 10% of the value of the utility's purchases under the FiT be placed into rate base.
 - (a) Please describe how HECO determined that 10% was the appropriate amount. Provide all supporting workpapers, calculations, and other analysis.
 - (b) Please explain legally, whether the proper proceeding to dispose of this question is the current proceeding or a rate case.
 - (c) Since "rate base" is defined as original cost of fixed investment less depreciation, please explain how including a non-investment purchase cost in rate base is (i) logical and (ii) lawful.
 - (d) If you determine that doing so is either illogical or unlawful, do you have in mind some other method of compensation?
 - (e) Do you agree that as a matter of arithmetic such compensation would allow HECO to recover from ratepayers an amount exceeding its actual cost, thus producing a return on equity exceeding the authorized return on equity?
 - (f) Assuming that the authorized return on equity reflected any risks associated with the purchase, precisely what is the cost-based rationale for the concept of recovering more than the actual cost of service in excess of the authorized return on equity?

26. Please list and describe any mechanisms that European regulators have used to compensate utilities for the additional imputed debt and administrative costs associated with FiTs.
27. Please list and describe any mechanisms that U.S. state or federal regulators have used to compensate utilities for the additional imputed debt and administrative costs associated with power purchase agreements.
28. According to HECO and the Consumer Advocate's response to Question 28 of Appendices A and C of the Feed-in Tariffs Investigation Scoping Paper:

"HECO proposes that in lieu of the utility earning any return on purchased power, the parties consider a FIT agreement which limits the utility's liability under the FIT agreement to the amount that the utility recovers in its rates. Under such a provision, HECO's payments to the customer-generator would be limited to the amounts recoverable in the purchased power (or other direct cost recovery) clause."

Please list and describe any instances where regulators in Europe or the United States have provided such cost recovery assurances to utilities for FiT or PPA purchases.

D. System size FiT eligibility questions

29. Please describe any system capacity or energy production size restrictions for systems seeking negotiated power purchase agreements with HECO, as described on page 10 of the KEMA attachment to HECO and the Consumer Advocate's FiT proposal.
30. Are there currently or could there be under HECO and the Consumer Advocate's proposed FiT, any renewable energy systems whose size renders them ineligible all of the following: HECO's proposed FiT, negotiated power purchase agreements, and the framework for competitive bidding?
31. Under HECO and the Consumer Advocate's proposed FiT, could distributed renewable energy systems not included in the initial list of eligible FiT technologies apply for net metering? If not, through what mechanism could they sell power to HECO or otherwise receive compensation or credit for power production?

E. FiT pricing considerations

32. Should the FiT price determination for each technology factor in an estimated annual amount of curtailment as described in HECO and the Consumer Advocate's responses to HDA/HECO-IR-1 and HDA/HECO-IR-4? If so, how should the amount of curtailment be estimated?
33. According to page 12 of HECO and the Consumer Advocate's FiT proposal:

"Furthermore, the HECO Companies and the Consumer Advocate agree that tariff pricing should differentiate between technology type, project size, and

location, and should be based on the costs of developing a 'typical' project that is reasonably cost-effective."

According to page 13 of HECO and the Consumer Advocate's FiT proposal:

"A base tariff rate by technology will be paid to generation projects that provide system reliability benefits such as being utility dispatchable or curtailable, or have low-voltage/low-frequency ride-through capabilities. The base FIT will be adjusted downwards for renewable energy systems that do not have these features, if allowable from a system integration perspective."

According to page 2 of the KEMA report attached to HECO and the Consumer Advocate's FiT proposal, "By basing incentive levels on the cost of generation plus a reasonable return, FITs create a high degree of investor security."

a. Based on these statements, it appears that HECO and the Consumer Advocate support crafting FiTs to compensate developers for the typical costs to develop each of the renewable energy technologies in Hawaii and provide a reasonable rate of return. Further, the compensation from this base level will be reduced for technologies that are not curtailable or dispatchable and do not feature low-voltage/low frequencies ride-through capability. It appears, that absent other measures, the downwardly-adjusted FiTs may be insufficient to compensate developers for the typical costs and provide a reasonable return for certain renewable energy technologies. Do you agree that this could be the case? Please explain why or why not.

b. Will the initial FiT price levels be created with the assumption that the compensation will be reduced based on lack of these features? Restated, would initial FiT prices compensate for the reduction described in the first quote to ensure that such technologies are still viable?

F. Other

34. In part A of DBEDT-IR-7, the Department of Business, Economic Development, and Tourism asked HECO and the Consumer Advocate how much of the total renewable resource commitments under the Energy Agreement HECO plans to purchase via the FiT. HECO and the Consumer Advocate's response claimed that such resources would be used "to the degree possible." The response also described 140 MW of PV to be contracted using negotiated power purchase agreements or the FiT as well as 127 MW of PV to be developed under net energy metering, which would be replaced by the FiT. Please also provide the total amount of renewable resources that HECO anticipates or seeks to elicit through its proposed FiT and the amount of capacity that HECO anticipates or seeks to elicit through its proposed FiT from each applicable technology. Provide this information in a table showing how much of each technology and size tier proposed in HECO's FiT proposal will likely be incorporated into the system during each year for each island.

35. Have HECO or the Consumer Advocate considered giving priority in the FiT queue, as described on page 33 of the KEMA report attached to HECO and the Consumer Advocate's FiT proposal, to projects that provide system reliability benefits, such as being utility dispatchable or curtailable, or having low-voltage/low-frequency ride-through capabilities? How might such a policy encourage or hasten the development of renewable energy projects that enhance system reliability?

II. Questions for Sempra Generation, Hawaii Bioenergy, and Alexander Baldwin, Inc.

36. Are future biomass facilities likely to be dispatchable and curtailable resources? Would sub-1 MW biomass facilities, such as anaerobic digesters, likely be dispatchable and curtailable?
37. With the support of an FiT, based on Hawaii's forestry and agricultural resources, to what extent in aggregate MWs and where would developers likely build additional biomass generators?
38. If included in an FiT, what is the potential for sub-1 MW biomass systems in Hawaii? Specifically, describe where such generators would likely be located, their potential number and aggregate capacity, and the likely feedstocks.
39. On a \$/MW basis, what interconnection costs have you experienced or do you anticipate for biomass projects in Hawaii? Please describe how interconnection costs vary by location and project size.

III. Questions for the Department of Business, Economic Development and Tourism

40. Please describe all biomass generators in Hawaii. For each, provide the capacity, feedstock, location, and if they are dispatchable and curtailable or not.
41. With the support of an FiT, based on Hawaii's forestry and agricultural resources, to what extent in MWs and where would developers likely build additional biomass generators?
42. With the support of an FiT, based on Hawaii's forestry and agricultural resources, to what extent in MW and in what locations would sub-1 MW biomass generators, including those using livestock feedstocks and anaerobic digestion, likely be developed?
43. Please estimate the potential market for both small (sub-1 MW) and large biomass facilities on each island. Provide the total MWs of capacity, size of likely systems, and the types of feedstocks.

44. According to DBEDT's website (<http://hawaii.gov/dbedt/info/energy/renewable/geothermal>), "Currently, the state's policy supports geothermal energy production on the Big Island exclusively for use on that island." Please describe the reasons for the state supporting the development of geothermal power only on the Big Island for use on that island.
45. Are there known geothermal resources in Hawaii outside the Big Island? If so, please describe where such resources are located and their quality and accessibility.
46. Please list and describe all operational geothermal projects in Hawaii. Please provide their locations, in-service dates, and size in kW.

IV. Questions for the City and County of Honolulu

47. In the City and County of Honolulu or specific areas therein, do zoning regulations prohibit erection of small wind turbines, such as those 60 to 100 feet tall? If such regulations exist, please describe them.
48. If zoning regulations restrict the height of wind turbines in the City and County of Honolulu or specific areas therein, what is the maximum height allowable in each location?
49. Please describe the process for obtaining variances for zoning regulations in the City and County of Honolulu or specific areas therein for erection of small wind turbines, such as those 60 to 100 feet tall.
50. Please describe the criterion used to evaluate requests for variances for zoning regulations in the City and County of Honolulu or specific areas therein for the erection of small wind turbines, such as those 60 to 100 feet tall.
51. Please describe any examples of variances being awarded for zoning regulations in the City and County of Honolulu or specific areas therein for the erection of small wind turbines or similar structures.

V. Questions for Tawhiri Power and First Wind Hawaii

A. Cost considerations

52. On a \$/MW basis, what interconnection costs have you experienced or do you anticipate for wind projects in Hawaii? Please describe how interconnection costs vary by location and project size.
53. Based on your experience, are there sufficient wind resources and available land on Oahu for additional development of either MW-class or small wind turbines? If so, please elaborate on where such projects may be possible and how large they could cumulatively be.

54. Based on your experience, how much more expensive in \$/MW are wind turbines in Hawaii than is typical in the mainland United States? Please describe the differences in detail. Is this difference changing or likely to persist?
55. Based on your experience, how much more expensive in \$/MW are permitting, land acquisition, and installation, including crane rental, in Hawaii than is typical in the mainland United States? Please describe such differences in detail. Is this difference changing or likely to persist?

B. Small wind in Hawaii

56. Are there any installed wind turbines in Hawaii with less than 150 kW of capacity? If so, please describe their sizes in kW, locations, total number, aggregate capacity, and installation years.
57. Are wind turbines of less than 150 kW generally utility curtailable? Please describe any additional expense associated with modifying small wind turbines to make them curtailable.
58. Please identify all environmental regulations, zoning ordinances, and other barriers to the development of wind resources in Oahu. Please describe such restrictions for both small wind turbines and large wind farms.

VI. Questions for Sopogy and Zero Emissions Leasing

59. On a \$/kW basis, what interconnection costs have you experienced or do you anticipate for solar PV and solar thermal projects in Hawaii? Please describe how these costs vary by location, technology, and system size.
60. Based on your experience, how much more expensive in \$/kW are solar modules in Hawaii than is typical in the mainland United States? Please describe such differences in detail. Is this difference changing or likely to persist?
61. Based on your experience, due to the cost of land, permitting, and labor, how much more expensive on a \$/kW basis, are solar PV and solar thermal systems in Hawaii to develop than is typical in the mainland United States? Please describe such differences in detail. Is this difference changing or likely to persist?
62. Please describe any environmental regulations, zoning ordinances, and other barriers to the development of solar PV or solar thermal systems on Oahu.